



## Understanding Hearing Loss

Hearing loss refers to a decrease in a person's sensitivity to sound and can range in degree from mild to profound depending on the extent of sensory cell loss or damage and can occur in one ear or both ears. Hearing loss is the third most common health-related problem in the United States. It is estimated that 28 million Americans have a hearing loss. Of those who have a hearing loss only six million have pursued hearing help and approximately 700,000 of those have a severe to profound hearing loss. Further, the incidence of hearing loss in newborns is approximately 1 in 1000 making hearing loss the number one congenital condition surpassing Down Syndrome and Spina Bifida. Hearing loss can be classified in three different ways: 1) based on location of the disease within the ear; 2) based on the onset of the hearing loss in relationship to speech and language development; 3) based on the cause of the disease within the ear.

### **Classification Based on the Location of the Disease within the Ear**

There are three different types of hearing loss depending on the location of the disease within the ear. A conductive hearing loss results when a problem originates with the outer ear or middle ear and prevents or impedes sound from being conducted to the inner ear. A conductive hearing loss can stem from an abnormality of development, such as the absence or incomplete formation of a part of the external or middle ear system. The problem can also be caused by disease within the external ear or the middle ear such as severe and continuous otitis media (inflammation of the middle ear often accompanied by fluid buildup). This type of hearing loss can generally be corrected by medical or surgical means so that hearing is restored. A sensorineural hearing loss results from an abnormality of development or disease affecting the cochlea or auditory nerve. The cochlea is the organ that converts sound waves to electrical energy. The auditory nerve transmits the sound stimuli in the form of electrical impulses to the auditory center of the brain. In general, sensorineural hearing loss cannot be treated by current medical or surgical techniques because there is permanent damage to the inner or auditory nerve. A mixed hearing loss involves both a sensorineural and conductive component. The conductive part of a mixed loss may be treated by medical or surgical means, depending on the type of disease present and the percentage of the total hearing loss it may represent.

### **Classification Based on the Onset of Hearing Loss in Relation to Speech and Language Development**

A prelingual hearing loss is one which is present prior to speech and language development. A postlingual hearing loss develops after speech and language development has begun or has been completed which could be between the second and sixth year. In general, the longer a person has experienced normal hearing, the better chance they have of maintaining that knowledge of the language developed.

### **Classification Based on the Cause of the Disease within the Ear**

Hearing loss can also be classified as genetic or non-genetic. A genetic hearing loss is one caused by the presence of an abnormal gene within one of our forty-six chromosomes. Genes are the bits of chemical material that determine our physical, intellectual, and other traits including eye color, body build, and shape and function of ear structures. They are located on the chromosomes, rod-shaped bodies found in the nucleus of the cells in our body. Ordinarily, we have 46 chromosomes in every cell (23 inherited from each parent). A genetic hearing loss is one caused by the presence of an abnormal gene within one or more

of our chromosomes. This abnormal gene may have been passed on by either one or both of the parents or it may have developed as the result of a spontaneous mutation or change during fetal development. About 30 percent of all children born with or who develop an early onset hearing loss have a genetic type of hearing loss. A non-genetic hearing loss is one caused by an event resulting in incomplete or abnormal development of the ear structures prior to birth or producing damage to the fully developed ear structures during the immediate birth period or sometime after birth. There are no abnormal genes present, and, therefore, there is no chance of transmitting a non-genetic hearing loss to future generations. This type of hearing loss occurs in about 70 percent of those born with a hearing loss.

Regardless of the classification of hearing loss, there are many treatment options available for individuals who have a hearing impairment. Depending on the type and severity of hearing loss medical intervention or the use of assistive technologies such as hearing aids or cochlear implants may be appropriate. Should you suspect a hearing loss we recommend that you contact an audiologist to set up an appointment for a hearing evaluation to determine your hearing status.